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10/802,562	03/17/2004	Jeffrey L. Coleman	95998	3496

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EXAMINER

FANTU, YALKEW

ART UNIT	PAPER NUMBER
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2838

MAIL DATE	DELIVERY MODE
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05/17/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/802,562	Applicant(s) COLEMAN, JEFFREY L.	
	Examiner Yalkew Fantu	Art Unit 2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 3, 5, 7 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Modgil (US 2002/0111756).

With respect to claims 1 and 7, Modgil discloses a battery safety monitor system (¶, lines 1-5) comprising: at least one battery (fig. 3, 104) comprising at least one cell string, wherein said at least one cell string is capable of outputting voltage signals; at least one zener diode (fig. 12, 1232), operatively coupled to said at least one battery cell string 104, capable of receiving and reducing voltage signals, and capable of outputting voltage signals (18 V zener); at least one safety device (fig. 3, 356, and fig. 12, 1232; ¶ 90, lines 1-6), operatively coupled to said at least one battery cell string (104, is a definition of a battery); capable of preventing damage to said at least one battery cell string; a microcontroller (fig. 12, 300), operatively coupled to said at least one zener diode 1232, capable of receiving and outputting data; display device (fig. 15, 1530), operatively coupled to said microcontroller 1528, capable of receiving data, and capable of displaying at least one battery voltage level (capable about 5 volts); a power supply (fig. 15D, 1518), operatively coupled to said microcontroller 1528 and said display device

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1530, capable of supplying power to said microcontroller 1528 and said display device 1530.

With respect to claims 2 and 21, Modgil discloses safety device is selected from the group consisting of PTC, thermal fuse, fuse, isolation diode, wetness detector and optoisolator (fig. 15 D, 1518-fuse.

With respect to claim 3, Modgil discloses a display device (fig. 15, 1530) is selected from the group consisting of visual alarms (blinking light of 1530), audible alarms (1534, speaker), relay switches (fig. 16, 1614) and serial interfaces coupled to display computers (1532 and 1530).

With respect to claim 5, Modgil discloses a battery safety monitor system further comprises an A/D converter (fig. 12, A/D Converter), operatively coupled to said at least one zener diode (1232) and said microcontroller (300), capable of converting voltage signals to digital signals, and capable of outputting digital signals (§ 31) to said microcontroller (300), and capable of receiving control signals from said microcontroller.

With respect claim 17, Modgil discloses a battery safety monitor system (§, lines 1-5) comprising: at least one battery (fig. 3, 104) comprising at least one cell string, wherein said at least one cell string is capable of outputting voltage signals; at least one zener diode (fig. 12, 1232), operatively coupled to said at least one battery cell string 104, capable of receiving and reducing voltage signals, and capable of outputting voltage signals (18 V zener); at least one safety device (fig. 3, 356, and fig. 12, 1232; § 90, lines 1-6), operatively coupled to said at least one battery cell string (104, is a definition of a battery), capable of preventing damage to said at least one battery cell

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string; a microcontroller (fig. 12, 300), operatively coupled to said at least one zener diode 1232, capable of receiving and outputting data; display device (fig. 15, 1530), operatively coupled to said microcontroller 1528, capable of receiving data, and capable of displaying at least one battery voltage level (capable about 5 volts); an A/D converter (fig. 12, A/D Converter); a power supply (fig. 15D, 1518), operatively coupled to said microcontroller 1528 and said display device 1530, capable of supplying power to said microcontroller 1528 and said display device 1530, and separate power supply (page 15, par. 0143; power transmission circuit 102, which is an internal combustion engine and alternators that supply power or recharge the battery) and a battery (fig. 12, 104).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 6, 8-13 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Modgil (US 2002/0111756) in view of Kopera (US 5,646,534).

With respect to claims 4, 8 and 18, Modgil discloses a battery safety monitoring system, a zener diode capable of receiving voltage signals, and an A/D converter, but does not disclose a plurality of batteries and an analog multiplexer, and an optoisolator.

Kopera, however, discloses a plurality of batteries (fig. 1, 14) and an analog multiplexer 30 (see also col. 3, lines 21-22), an optoisolator (fig. 1, 20).

Modgil and Kopera are analogous arts because they are from the same field of endeavor namely battery monitor for vehicles and safety system.

At the time of the invention it would have been obvious to a person having ordinary skill in the art to provide plurality of batteries, analog multiplexer and optoisolator as taught by Kopera to the vehicle safety of Modgil to ensure the safety of the battery of a vehicle.

The motivation would have been that the use of multiple batteries is used to produce more enough power for cars and vans (col. 2, lines 41-43); and a analog multiplexer used to multiplex multiple inputs into one output (see col. 3, lines 20-32); and an optoisolator to transmit a high power digital signal across the boarder to the low voltage non-isolated side (col. 4, lines 33-37).

Therefore it would have been obvious to combine Modgil with Kopera for the benefit of battery safety - security system to obtain the invention as specified in claim 4.

Regarding claim 6, Modgil discloses a battery safety monitoring system with a microcontroller, display device and a power supply, but does not disclose an optoisolator. Kopera, on the other hand, discloses an optoisolator (fig. 1, 20). It would have been obvious for one having ordinary skill in the art would provide an optoisolator to transmit a high power digital signal across the boarder to the low voltage non-isolated side (col. 4, lines 33-37).

With respect to claims 9, 10 and 19, Modgil discloses a battery safety monitoring system with data collection and display device and a microcontroller, but does not disclose an optoisolator with a serial interface and a connector (or UART) operatively

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coupled to optoisolator. Kopera, however, discloses an optoisolator (fig. 1, 20) operatively coupled to said microcontroller 52; a connector (the boarder 20, see col. 4, lines 34-36); UART (Universal Asynchronous receiver/transmitter) is a well known connector used to connect or interface a microcontroller to its serial device, and is inherent to a microcontroller, specially imbedded in the microcontroller of the vehicle's safety system) (claim 10), operatively coupled to said optoisolator and, capable of receiving and outputting digital signals (48), and capable of receiving and outputting power (64). The motivation would have been that since optoisolator is used in preventing reverse current and is a combination of a photodiode and a phototransistor where an optical signal from the photodiode is transmitted across the boarder (considered as a connector between 16 and 18; see fig. 1) on the low voltage side (col. 4, lines 33-36).

Regarding claims 11 and 12, Modgil discloses a battery safety monitoring system with a microcontroller and A/D converter, but does not expressly discloses said connector comprises long wire and a wet (moisture) detector respectively.

Kopera discloses connector comprises long wires (col. 2, 1-8). These wires help transmit battery voltage and battery temperature signals from the battery monitor to the vehicle controller (col. 2, lines 3-5). Regarding a wetness detector, it is implicitly defined (electrolyte leakage of a battery is detected when a voltmeter (voltage sensor) or a thermal sensor reads a decrease in the temperature of a battery due to electrolyte leakages; voltmeter and temperature sensor are inherent of a vehicle safety monitoring system).

Regarding claims 13 and 20, Modgil discloses a data collection and display device (fig. 15, 1530, 1528), a display device, a power supply and further comprises: a second microcontroller (it is obvious that a typical mid range vehicle has as many as 50 or more microcontrollers), but does not expressly disclose a digital MUX. Kopera, however, discloses a multiplexer 30 (see also col. 3, lines 21-22, but the multiplexer is an analog mux that receives voltages signals of analog inputs; and at the time of the invention it would have been obvious to a person of ordinary skill in the art to provide a digital multiplexer that receives a digital signals and select from one of the plurality of theses signals).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Modgil (US 2002/0111756) in view of Hemminger et al (US 6,628,207).

With respect to claim 15, Modgil discloses battery safety monitoring system with at least one battery, but does not discloses the battery cells are lithium based battery.

Hemminger et al (hereinafter, Hemminger), however discloses a lithium-based battery (col. 4, lines 31-32).

Modgil and Hemminger are analogous arts because they are from the same field of endeavor namely battery monitor and warning safety system.

At the time of the invention it would have been obvious to a person having ordinary skill in the art to provide lithium based battery as taught by Hemminger to the vehicle safety of Modgil to ensure the life and safety of the battery of a vehicle.

The motivation would have been that the use of lithium-based battery is used to produce more power and for longer period of time since lithium based batteries are well known in the art for their high energy output.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Modgil (US 2002/0111756) in view of Kopera (US 5,646,534) further in view of Hemminger et al (US 6,628,207).

With respect to claim 16, combined references of Modgil and Kopera disclose battery safety monitoring system with wetness detector, but do not disclose that wetness detector configured to produce reduced voltage when thionyl chloride is used.

Hemminger discloses that the battery cell used is a lithium thionyl chloride cells (col. 4, lines 31-32). The reason is that using a lithium thionyl cell helps to operate in a wide temperature range, and relatively smaller in size (col. 9, lines 6-10) so that it fits in any movable electronic apparatus or vehicles.

Response to Arguments

Applicant's arguments filed on 12/27/2006 have been considered but are ineffective to overcome the Modgil and Kopera references. (See the rejection above).

With respect to applicant's argument, which states "... plug of Modgil is equivalent to the power supply... however, a plug is not equal to a power supply." But, as disclosed earlier, Modgil plug for the condition-reporting module 1500 connects the module 1500 to the power transmission circuit 102 (power transmission circuit 102, which is an internal combustion engine and alternators that supply power or recharge the battery see also par. 0082). This connection supplies the power to the interface (see

par. 0143). As to applicant's argument that the battery and the power supply disclosed as separate elements, and " ... Modgil's automotive battery may not... does not disclose a separate power supply ..." Modgil, in fact, discloses a power supply (page 15, par. 0143) and a battery (fig. 12, 104). Besides, applicant claim 1 does not claim a separate power supply, therefore is irrelevant to the claim.

With respect to applicant's argument of "... a zener diode 1232 is not equivalent to ... safety device... capable preventing damage to the battery..." The main purpose of zener diode 1232 is protecting the circuit from reverse current damage to the battery as disclosed by Modgil in page 11 paragraph 0111, where the MOSFET 1224 is connected to the negative terminal 202 of the vehicle battery 104, and as the same time the zener 1232 is connected between the battery terminal and the MOSFET for protection. The microcontroller 300 also controls the electrical activity and transmits battery-disabling signal to the switch, which also controls activities of the zener diode mentioned (see also par. 0112).

Regarding the 'no display device' argument, Modgil discloses a display device (fig. 15D, 1530) that contains a 2000 Mil candela LEDs controlled by the microcontroller 1528 displaying red light to signaling warning as per the transmitted report (par. 144).

With respect to applicant argument, which says "... no reasonable expectation of success in modifying Kopera and Modgil by adding a digital multiplexer because there must be a plurality of digital signals for a digital multiplexr to multiplex... no digital signals is found or suggested in the reference" As disclosed in the two references and digital signals come out of digital circuits (such as output of latch 1516 of fig. 15 D) and

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of the various microcontrollers, but as disclosed in the 103 rejection as being unpatentable over Modgil, Modgil discloses an analog muxes, that receives voltage signals of analog inputs, but it would have been obvious to a person of ordinary skill in the art to provide a digital mux that receives digital signals and select from plurality of signals inputted from digital circuits as mentioned above to have a clear digital outputs, which is having less interference in the transmitted signals.

With respect to applicant's argument of "... not a connector of an optoisolater, but rather an internal part of optoisolator..." Kopera reference discloses that the isolated side 16 (fig. 1, 16) across the boarder, where the two sides interface or connected (broad interpretation) across the boarder 20 by an opto-isolator 50. The interfacing or interconnecting element boarders the two sides as disclosed (see fig. 1, 16, 20 and 18; col. 4, 26-38). Regarding the "wetness detector", applicant argues, "... electrolyte leakage is not necessarily accompanied by a decrease in voltage or temperature of a battery". But, the two electrode immersed in an electrolyte solution in a battery may have 12V. Due to the leakage of the electrolyte, when the level decreases, the voltage does not stay in full level; rather it goes lower than before. Therefore, an electrolyte leakage gradually lowers the voltage. Besides, since there is no any further details regarding the claim language of 'wet detector', a voltmeter (voltage sensor) or a thermal sensor reads a decrease in the temperature of a battery due to electrolyte leakages; and voltmeter and temperature sensor are inherent of a vehicle safety monitoring system.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yalkew Fantu whose telephone number is 571-272-28928. The examiner can normally be reached on M - F; 7- 4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl D. Eastom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


KARL EASTHOM
SUPERVISORY PATENT EXAMINER